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Abstract

CONSTRUCTION EXPERIENCE ON TOKAI ATOMIC POWER STATION

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The Tokai Power Station is the first commercial atomic power station in Japan. The Station, 166 MW gross electrical output, located 80 miles from Tokyo in the north-east direction, started its construction in December 1959 and is scheduled to go critical in December 1964.

The paper describes problems encountered and experience gained during the construction works of the Station and these are summarized in the following:

1. Station siting problem including meteorological surveys for investigating the atmospheric diffusion phenomena of the radioactive argon in the shield cooling air.

2. Special design feature of the Station including:

   a. Aseismic design for the plant items such as reactor building, graphite core, main gas ducting, etc., together with the method of structural analysis, the special vibration experiments and the acceleration levels involved.

   b. Special safety devices such as:

      Emergency shut-down device; a special device ensuring shut-down of the reactor with small boron steel balls contained in hoppers located at the lower end of standpipes, even in the case of severest earthquake causing deformation in the control rod channels thus preventing the control rods from proper operation.

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Emergency carbon-dioxide injection system; a system consisting of eight emergency gas storage tanks and suitable pipe-works to prevent the reactor from air ingress in the event of gas duct rupture.

Gas release and partial containment scheme; a scheme for discharging carbon-dioxide gas through planned path in the event of gas duct rupture accident.

3. Construction experiences, covering construction schedule, inspection during the course of the construction, major design changes, cooling water intake works, etc.